

CLAIMS

What is claimed is:

1. A method of characterizing the loss for a digital traffic source as a function of the buffer size B for a given transmission rate ρ , comprising:

5 *Fig 1* feeding an actual or simulated first traffic source into a peak-rate shaper and producing a new time sequence for the bit-stream of the traffic source;

Fig 2 feeding said first traffic source from the output of the peak-rate shaper, $a(r,t)$, into a server with deterministic rate ρ in the range $[0,r]$ where r is the peak rate of the shaper;

10 observing the dynamics of queue size $Q_{B,\rho}(r,t)$; and

recording points of loss wherein the maximum queue size $Q_{B,\rho}(r,t)$ exceeds the buffer size B which corresponds to the loss of the traffic source for rate ρ .

2. A method as recited in claim 1, further comprising plotting of loss points
15 for various buffer sizes B to create a loss curve for the traffic source.

3. A method as recited in claim 1, wherein the traffic source comprises a data stream selected from the group of data streams consisting of multimedia data streams, elementary video streams, and MPEG-2 transport streams.

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4. A method for determining the loss rate of a traffic source, comprising:
transmitting the frames of an actual or simulated traffic source into a peak-rate shaper and producing a new time sequence for the bit-stream of the input traffic source;
collecting the bit-stream at the output of the peak-rate shaper $a(r,t)$ into a leaky-
5 bucket shaper, said traffic source at said output having a transmission rate ρ and a
buffer of size B ;
recording busy periods of the traffic source at rate ρ received in buffer of size B ;
recording buffer points at which loss occurs for each busy period recorded; and
determining the maximum loss for buffer size B at rate ρ .

10 5. A method as recited in claim 4, further comprising plotting a loss rate
curve for a desired range of buffer sizes B of interest by executing additional iterations
to determine maximum loss rate across the range of buffer sizes.

15 6. A method of determining loss rate for a traffic source at a given rate ρ
received in a buffer of size B , comprising:
transmitting the frames of an actual or simulated traffic source into a peak-rate
shaper and producing a new time sequence for the bit-stream of the input traffic source;
collecting the bit-stream at the output of the peak-rate shaper $a(r,t)$ into a leaky-
20 bucket shaper, said traffic source at said output having a transmission rate ρ and a
buffer of size B ;

determining the set of active periods and associated queue lengths for the frames of the traffic source at rate ρ ;

determining busy periods for rate ρ and buffer size B ; and

iteratively examining the busy periods to determine points of loss and busy period

5 breaks for the given buffer size B ; and

outputting maximum detected loss rate.